



A.D. 1854 N^o 1359.

S P E C I F I C A T I O N

OF

OLIVER RICE CHASE.

MACHINERY FOR THE MANUFACTURE
OF MEDICATED AND OTHER LOZENGES.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,
25, SOUTHAMPTON BUILDINGS, HOLBORN.

Price 11d.

1855.



A.D. 1854 N° 1359.

**Machinery for the Manufacture of Medicated and
other Lozenges.**

LETTERS PATENT to Oliver Rice Chase, of 17, Cornhill, London,
Mechanical Engineer, for the Invention of "**IMPROVEMENTS IN MACHINERY
FOR MANUFACTURING LOZENGES, AND FOR OTHER PURPOSES.**"

Sealed the 22nd September 1854, and dated the 21st June 1854.

PROVISIONAL SPECIFICATION left by the said Oliver Rice Chase at the
Office of the Commissioners of Patents, with his Petition, on the 21st
June 1854.

I, OLIVER RICE CHASE, of 17, Cornhill, London, Mechanical Engineer, do
5 hereby declare the nature of the said Invention for "**IMPROVEMENTS IN
MACHINERY FOR MANUFACTURING LOZENGES, AND FOR OTHER PURPOSES,**" to be as
follows:—

This Invention consists in the adaptation of mechanical means to the
mixing and rolling and otherwise preparing of paste for the manufacture of
10 medicated or other lozenges, and to the cutting out circular or other formed
lozenges or pieces from the paste thus prepared; the same machinery being
applicable to the preparing and cutting out of cakes, biscuits, and other
similar articles.

The apparatus may be drawn by manual power, or by a band from any
15 suitable driving machinery. The mixing box or trough consists of a combi-
nation of rollers and endless aprons, so arranged that the ingredients of the

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

paste to be made are gradually and uniformly brought together, and when formed into a plastic mass rolled out in a continuous strip or sheet ready to be subjected to the action of cutters, which cut out from the sheet the lozenges, cakes, or biscuits it is desired to produce.

When the paste has been properly prepared by the mixing apparatus, it is 5 placed in strips of suitable width and length upon an endless apron, which carries it on to a second apron, which delivers it to the cutting cylinder. In passing from the first to the second apron, the paste passes between two revolving belts, which respectively move through compartments containing a suitable dusting powder or flour. This powder is kept from passing out of 10 the compartment, and is properly spread over the surface of the dusting belts or aprons by scrapes or blades, placed at a proper inclination just above the surface of the aprons. By this arrangement the surface of the aprons is covered with a thin layer of powder or dusting, which is communicated to the strip of paste as it passes between them on to the second feeding apron. 15

Just before passing from the second feeding apron on to the cutting cylinder, the paste is smoothed or polished by a reciprocating polisher, which is moved back and forth over its surface by means of a crank. Thus polished or smoothed, the paste passes on to the cutter cylinder.

This construction and operation of the cylinder is as follows:—It is made 20 of brass or any other proper material, and is perforated with holes of the size and shape of the intended lozenge. These holes are in lines parallel to the axis of the cylinder; screwed into these holes or otherwise attached to the cylinder are tubes or cutters, in which fit pistons attached to piston rods, which pass into the interior of the cylinder. The piston rods have rings on 25 their inner ends, through which pass rods a little longer than the width of the cylinder, in such a manner that all the pistons in one row of tubes or cutters can be simultaneously advanced or retracted by moving the rod passing through their ends. The rods project beyond the end of the cylinder, and are kept up against the head of the cylinder by means of spiral springs, placed 30 one under each end of each rod. When the springs are released, the pistons are on a level with the outer ends or mouths of the tubes or cutters. The pistons are retracted to any desired distance by compressing the spiral springs which support the ends of the rods. This is effected by passing the ends of the rods under an arc properly adjusted, by which means the pistons can be 35 drawn back or thrown out at any point in the revolution of the cylinder that may be desired.

Over each row of the tubes or cutters projecting from the cylinder is placed

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

a perforated strip of metal, having holes of size and shape corresponding with those of the cutters tubes, so that these may pass through it. These strips or clearers are supported on springs, which tend to force them out to a line with the outer ends or mouths of the cutter tubes. On the ends of the
5 strips are placed pins, which when passed under an arch properly adjusted keep the strips at any required distance below the line of the outer ends of the cutters. This depression will be regulated according to the thickness of the paste that is passing through the machine. When the pins pass from under the arc, the springs which support the strips are released, and send
10 the strips suddenly and forcibly out to a line with the mouths of the cutters.

When the paste passes on to the cylinder, the pistons are retracted to the depth necessary to allow the cutter tubes to receive each a lozenge of proper thickness. The strips is also depressed to a corresponding depth below the mouths of the cutters. The paste is successively driven in to the row of
15 cutters by a hammer or presser, supported by springs, and driven down by pins or studs on a shaft revolving above it, which, as the cylinder revolves, strikes in succession each row of cutters. The superfluous paste remains upon the strips. After passing the hammer, the paste passes against an elastic roller, made of india-rubber, or other proper elastic material, which further presses
20 it into the cutters. A further revolution of the cylinder brings the paste opposite an endless band, intended to carry off the superfluous pastes, which at this point is thrown upon it by the sudden action of the springs under the strips, which are released in succession at this point in the revolution of the cylinder. The tubes containing the lozenges pass to the lowest point in
25 the revolution of the cylinder, where the ends of the rods which pass through the piston rods are released from the arc which confined them, and the pistons of each rod simultaneously descend and force the lozenge out of the cutter or tube on to a thin board, which is moved along under the cylinder at proper speed by an endless belt, moving on rollers, on which it rests, and
30 which projects any required distances beyond the end of the machine; any number of such boards may be successively passed through the machines and removed as they covered with lozenges.

Having delivered a row of lozenges upon the board, the pistons are again gradually retracted by means of the arc. The strip is also gradually retracted
35 by similar means, and by the time both reach the highest point they are ready to to receive a fresh charge of paste.

The elastic roller is kept clean by a cylindrical brush, revolving in contact with it, and driven by a band from a pulley on its axis. Motion is given to

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

the various parts of the machinery by well-known mechanical means, which will be fully described by my complete Specification, and the Drawings which will accompany it.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Oliver Rice Chase in the Great Seal Patent Office on the 15th December 1854.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, OLIVER RICE CHASE, of 17, Cornhill, London, Mechanical Engineer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-first day of June, in the year of our Lord One thousand eight hundred and fifty-four, in the year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Oliver Rice Chase, Her special licence that I, the said Oliver Rice Chase, my executors, administrators, and assigns, or such others as I, the said Oliver Rice Chase, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN MACHINERY FOR MANUFACTURING LOZENGES, AND FOR OTHER PURPOSES,**" upon the condition (amongst others) that I, the said Oliver Rice Chase, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Oliver Rice Chase, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the accompanying Drawings, whereon Figure 1 is a top view of the machine; Figure 2 is a view of one side of the machine; Figure 3 is a view of the opposite side of the machine; and Figures 4, 5, 6, and 7, are detail views of parts of the machine. The same letters of reference apply to the same parts in all the Figures.

This Invention consists in the adaptation of mechanical means to the

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

mixing and rolling and otherwise preparing of paste for the manufacture of medicated or other lozenges, and to the cutting out of circular or other shaped lozenges or pieces from the paste thus prepared; the same machinery, modified in size, being applicable to the preparing and cutting out of cakes, biscuits, 5 and other similar articles. The machine may be driven by manual power, or by a band from any suitable prime mover.

The materials to be used in the manufacture of the lozenges, after being partially mixed by hand in an ordinary mixing trough, are passed to the mixing box, which forms the first part of my Invention. This box is not 10 separately represented in the Drawings, being precisely similar in principle and operation to a portion of the machine represented in section in Figure 3. Two endless aprons (*a, a*), passing over rollers (*b, b*), move at the bottom of two boxes (*c, c*), in the directions indicated by arrows. The boxes (*c, c*) are supplied with pulverized sugar or other material, with which the consistence 15 of the paste to be made is to be modified. The aprons (*a, a*) are thus continually supplied with the powdered material, the quantity being regulated by raising and depressing the blades (*d, d*), by means of the adjusting screws (*e, e*). After passing the two aprons (*a*), (*a*), the paste is delivered upon a third apron, horizontal in position, which delivers it in a condition to be 20 reduced to the required thickness, rolled, polished, and cut into lozenges of proper shape and size by the portion of the machinery now to be described, and which is represented in the accompanying Sheets of Drawings.

In Figure 1, which represents a top view of the machine, (A) is the driving pulley, receiving motion, by means of a band (B), from any suitable 25 prime mover. The pulley (A) carries on its axis a pinion (C), which gears into and drives a spur wheel (D). On the same axis with spur wheel (D) is the rag wheel (E), which by means of an endless chain (F) drives rag wheel (G). On the same axis with rag wheel (G) is a band wheel (H), which by means of a band (J) gives motion to a wheel and drum, not seen in the 30 Drawings, which drive the endless apron (K), on which the boards, hereafter to be described, are passed through the machine to receive the finished lozenges. This apron (K) is about twenty-four (24) feet long and six (6) inches wide, and supported by rollers. The rag wheel (G) is on the end of the main shaft (L) of the machine, *i. e.* the shaft which carries the cutting 35 cylinder (M), which is attached to the shaft by two cylinder heads. This cylinder is about eight (8) inches in diameter. Its construction and operation are as follows, reference being had to Figures 4, 5, 6, and 7:—It is made of brass or any suitable material, and is perforated with holes (X, X)

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

of the size and shape of the intended lozenge. These holes are made in lines parallel to the axis of the cylinder. Screwed into these holes or otherwise attached to the cylinder are tubes or cutters (Z, Z), see Fig. 6, in which fit pistons (Y, Y), see Fig. 7, attached to piston rods, which pass into the interior of the cylinder. The piston rods have rings on their inner ends, 5 through which pass rods (l, l,) a little longer than the width of the cylinder, in such a manner that all the pistons in one row of tubes or cutters can be simultaneously advanced or retracted by moving the rod passing through their ends (i, i). The rods project beyond the ends of the cylinder, and are kept up against the head of the cylinder by means of spiral springs (m, m), Figs. 4 10 and 5, placed one under each end of each rod. When the springs are released the pistons are on a level with the outer ends or mouths of the tubes or cutters (Z, Z). The pistons are retracted to any required distance by compressing the spiral springs which support the ends of the rods. This is effected by passing the ends of the rods under an arc (A¹), Fig. 5, properly adjusted, by 15 which means the pistons can be drawn back or thrown out at any point in the revolution of the cylinder that may be desired. Over each row of tubes or cutters projecting from the cylinder is placed a perforated strip of metal (B¹), Figs. 4 and 6, having holes of size and shape corresponding with those of the cutters or tubes (Z, Z,) so that these may pass through them. These strips 20 or clearers are supported on springs (n, n), Fig. 6, which tend to force them out to a line with the outer ends or mouths of the cutter tubes. On the ends of the strips are placed pins (o, o), which being passed under an arc properly adjusted keep the strips at any required distance below the line of the outer ends of the cutters. The depression will be regulated according to the thick- 25 ness of the paste that is passing through the machine. When the pins (o, o,) pass from under the arc, the springs (n, n,) which support the strips or clearers are released, and send the strip suddenly and forcibly out to a line with the mouths of the cutters.

On the opposite end of the main or cylinder shaft (L) to that on which the 30 rag wheel (G) is attached, are two spur wheels (N) and (O). One of these (O) drives the roller (H¹), which carries the apron (G¹), intended to remove the superfluous paste; the other (N) gears into a pinion (P), which carries a rag wheel (R), which by a chain drives the shaft (S), which actuates the hammer or presser (T). On the opposite end of the shaft (S) is a band 35 wheel (V), which by a band drives a crank attached to the polishing roller (W). In contact with the main cylinder, and driven by friction against it, revolves an elastic roller made of india-rubber, the object of which is to press the

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

paste into the tubes or cutters, and keep it from falling out of them. This roller is marked (C¹) in the Drawings, and is kept clean by a brush (D¹), revolving in contact with its surface, and driven by a band from a wheel upon its axis.

5 The rollers and aprons shewn in Figure 3 are driven by the pulley (r), the cog wheel (s), and the pulley (u), all on the same shaft with the rag wheel (D). The pulley (r) gives motion to the pulley (g) and band (f). One of the rollers (b) is on the same shaft with rag wheel (D). On the other end of that shaft is a cog wheel (s) and pulley (t). The cog wheel (s) gears into and moves
10 wheel (t), connected with the other roller (b), and its apron (a). The pulley (u) by means of a band (v) gives motion to roller (a¹), Figs. 2 and 3, and its apron (b¹). The tension of the aprons is regulated by suitable adjusting screws. The hammer or presser (T) is lifted by a spring (d¹), and driven down by pins on the shaft (S).

15 The operation of the machine is as follows:—When the paste has been properly prepared by the mixing apparatus first herein described, it is placed in strips of suitable width and length upon the endless apron (f), Fig. 3, whence it passes between aprons (a) (a) on to apron (b¹), which delivers it to the cutting cylinder (M). The aprons (a, a,) passing out of the compartments or boxes
20 (c, c,) are covered with powdered sugar, or other suitable dusting powder or flour. This flour is kept from passing out of the boxes too rapidly, and is properly spread over the surface of the dusting belts or aprons by the blades (d) (d), placed at a proper inclination just above the surface of the aprons; thus a proper supply of dusting is spread upon the surface of the paste as
25 it passes between the aprons (a) (a), where they pass over the rollers (b) (b). The distance between these aprons at this point regulates the final thickness of the paste, and is controlled by adjusting screws. The paste is delivered from these aprons upon the inclined apron (b¹), which feeds it on to the cutting cylinder. In its passage along this apron the paste is smoothed or polished
30 by the cylindrical polisher (W), which moves rapidly back and forth over its surface. Thus prepared, the paste is delivered on to the cutting cylinder (M). At the point where the paste is received on the cylinder, the pistons (y) are retracted to the depth necessary to allow the cutter tubes to receive each a lozenge of proper thickness. The clearer (B¹) is also depressed to a corre-
35 sponding depth below the mouths of the cutters. The paste is driven into the cutters by the hammer or presser (T), operated as before described, which, as to the cylinder revolves, strikes the rows of cutters in succession. The superfluous paste remains upon the clearers (B¹). After passing the hammer, the

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

paste passes against an elastic roller (C¹), which further presses it into the cutters, and holds it there. A further revolution brings the paste opposite an endless band (G¹), working at right angles to the length of the machine, and communicating with the trough (F¹). This band (G¹) receives and carries off the superfluous paste, which is thrown upon it by the sudden action of the springs (*n*), under the clearers (B¹), which are successively released at this point in the revolution of the cylinder. The cutter tubes containing the lozenges pass to the lowest point in the revolution, where the ends of the rods which pass through the piston rods are in succession released from the arc which confined them, and the pistons of each row simultaneously descend and force the lozenges out of the cutters on to a thin board, which is moved along under the cylinder at proper speed by an endless belt (K), driven as before described. Any number of such boards may be successively passed through the machine and removed as they are covered with lozenges. Having delivered a row of lozenges upon the board, the pistons are again and gradually retracted by the passing of the rod (*l*) under the arc, as before described. The clearer is as gradually retracted by similar means, and by the time both reach the highest or feeding point, they are ready to receive a fresh charge of paste.

Having thus described my Invention of "Improvements in Machinery for Manufacturing Lozenges, and for other Purposes," I wish it to be understood that I do not limit myself to the precise dimensions or materials herein-before mentioned, but make my machinery of such size and materials as may be suitable for the work it has to perform. I also claim to use the mechanical equivalents of any of the working parts, while the mode of operation remains substantially the same.

What I claim as my Invention and desire to secure by Letters Patent is,—

First, the mixing box, constructed and operating substantially in the manner described. I do not claim the use of rollers separately, as I am aware that they have been used before, but I do claim the use of aprons and rollers in combination, and for the purpose specified. I also particularly claim the mode of regulating the supply of powdered sugar or "dusting" by the use of boxes or compartments and adjustable blades, operating substantially in the manner described.

Second, I claim the cutting cylinder and the parts directly connected with it, constructed and operating substantially as described. And I particularly claim the use of the pistons and clearers in combination with the cutters, and the mode of operating them by springs and arcs, substantially as described. And I also claim the use of a hammer or presser to drive the paste into the

Chase's Improvements in Machinery for Manufacturing Lozenges, &c.

cutters, and of an elastic roller to retain it there, both constructed and operating substantially as described.

And, finally, I claim the general arrangement of the entire machine herein described, constructed and operating substantially in the manner herein
5 described, and for the purposes specified.

In witness whereof, I, the said Oliver Rice Chase, have hereunto set my hand and seal, this Fourteenth day of December, in the year of our Lord One thousand eight hundred and fifty-four.

OLIVER RICE CHASE. (L.S.)

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1855.

THE UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS
JANUARY 1, 1910

DEAR MR. [Name]
I have your letter of the 28th of December and am
glad to hear that you are well and hope to
return to the States soon.

I am very sorry to hear that you are
not able to return to the States at present.
I hope you will be able to do so soon.
I am, very respectfully,
Yours truly,
[Signature]

THE UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS
JANUARY 1, 1910

[Faint, illegible text continues in the body of the letter, appearing as several paragraphs of handwritten script.]

FIGURE 1.

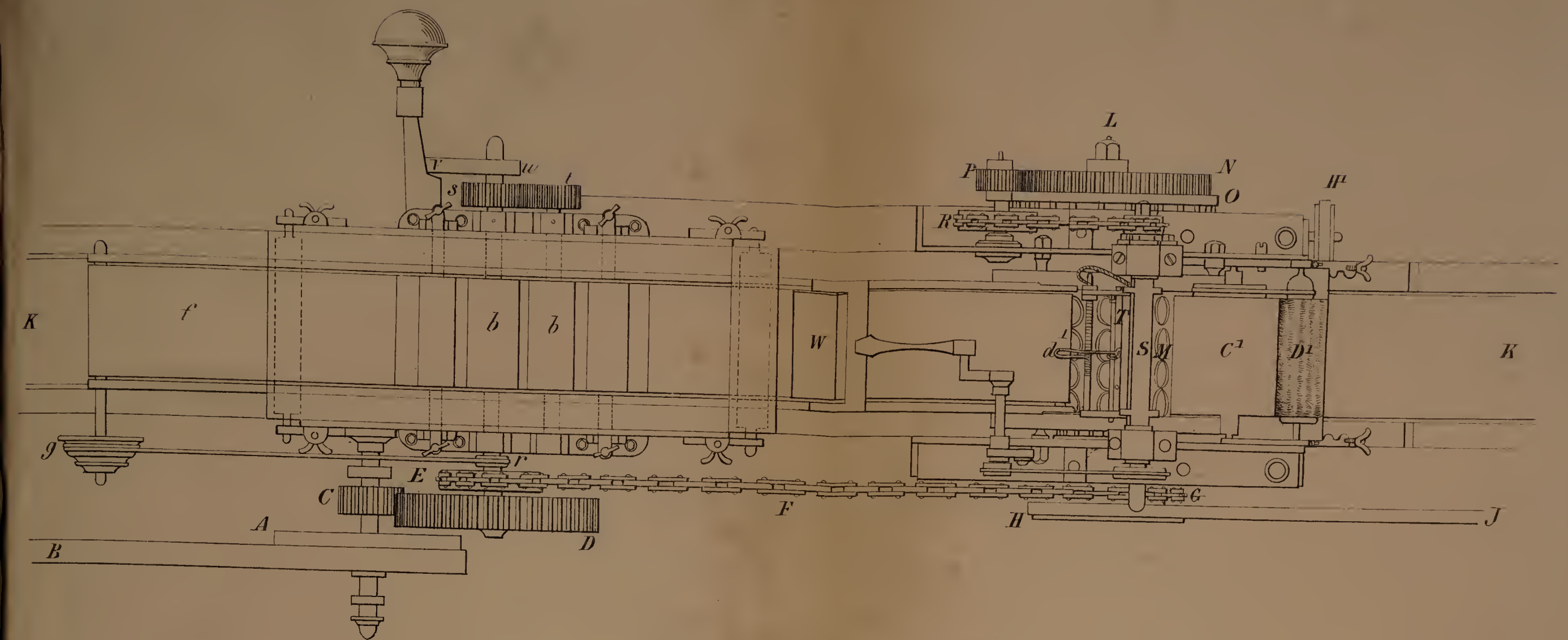
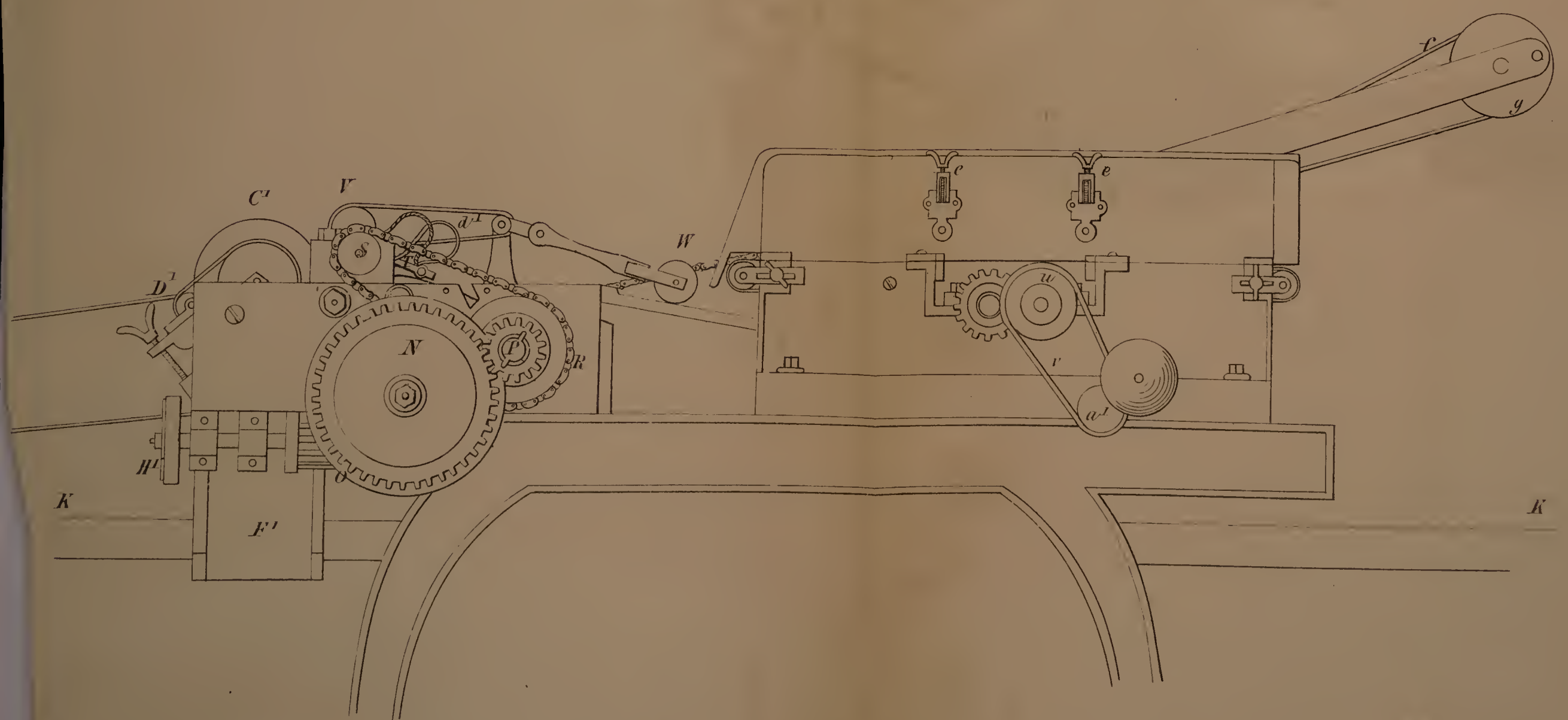


FIGURE 2.



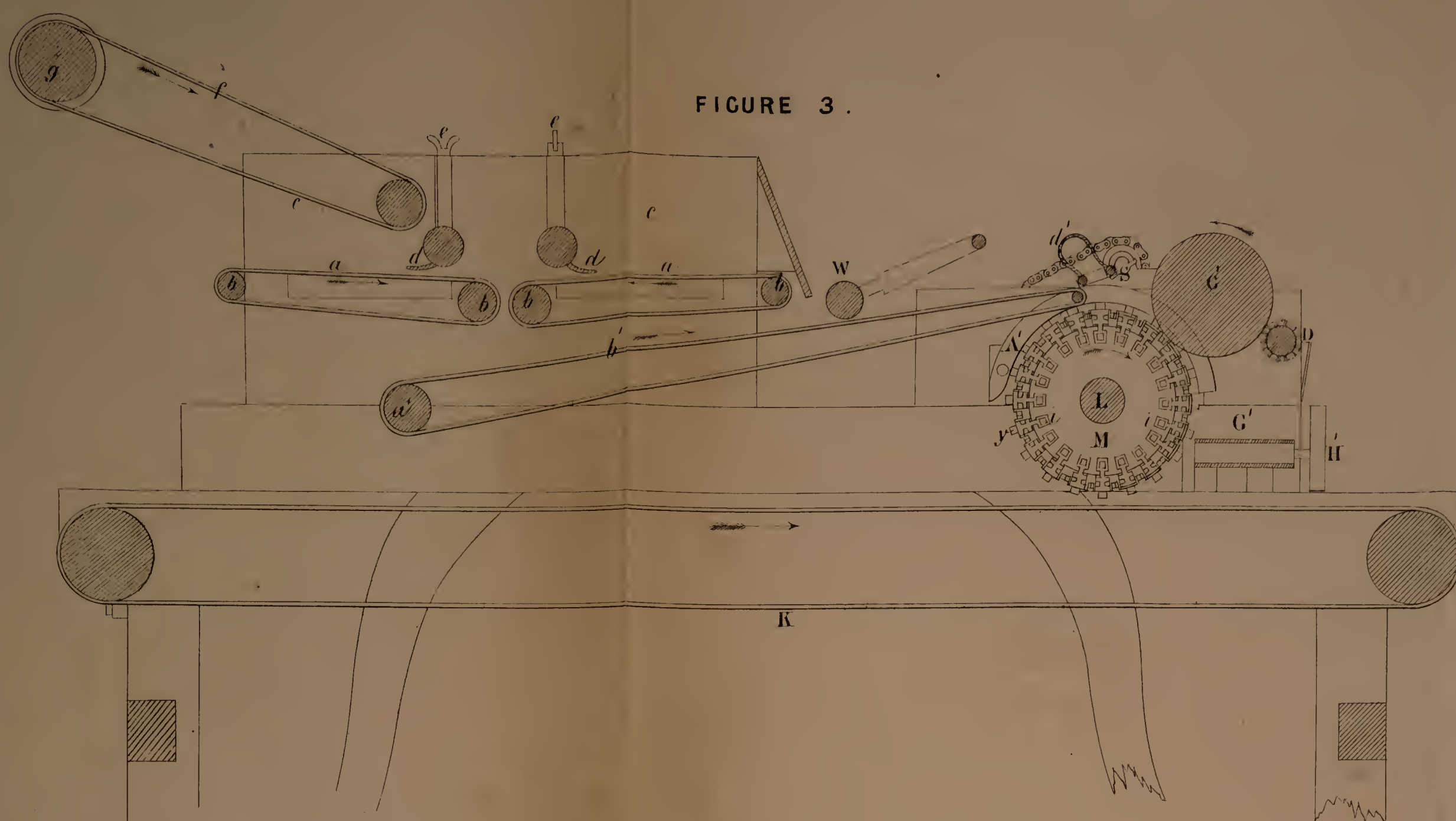


FIGURE 3.

FIGURE 4.

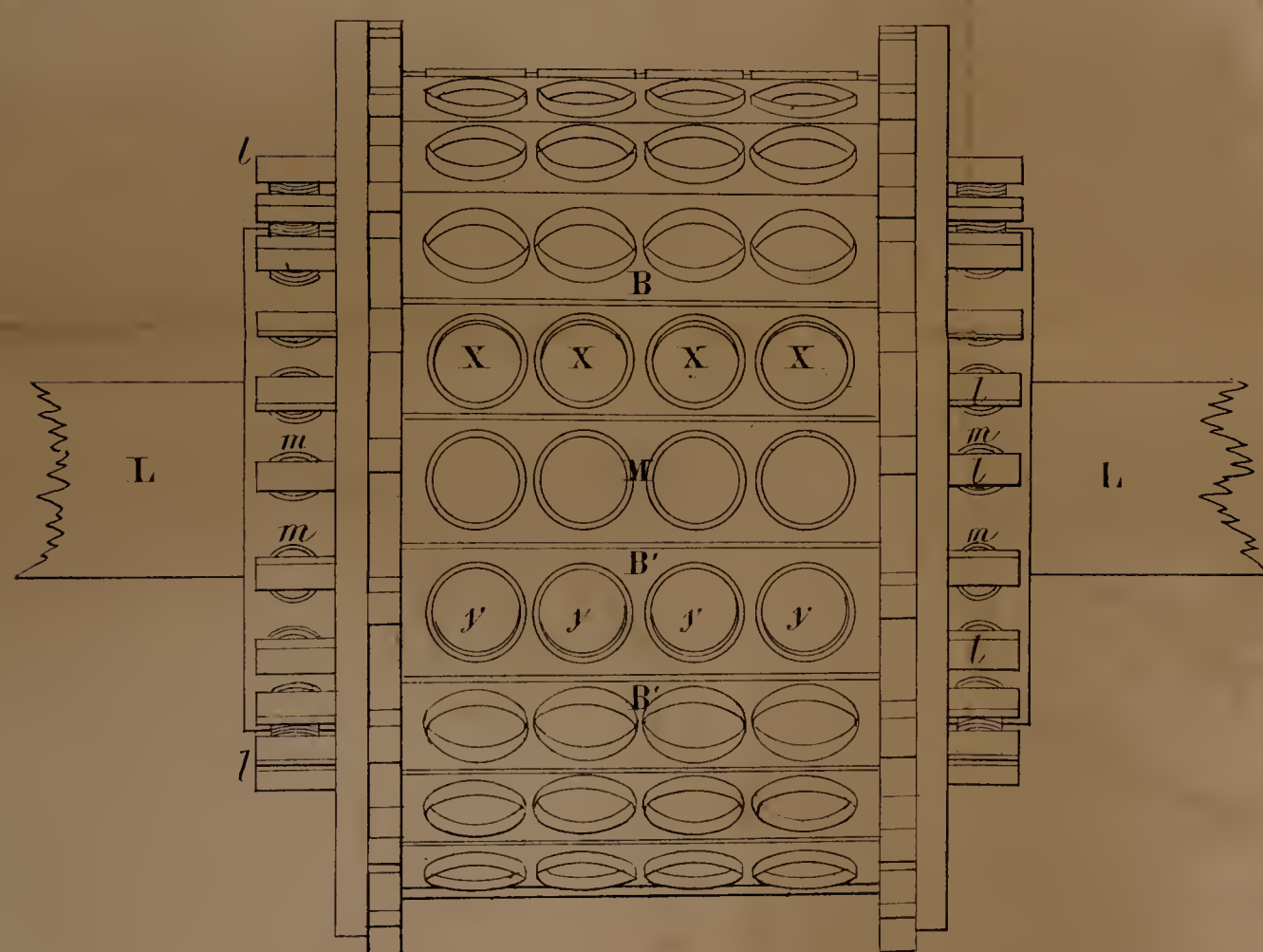


FIGURE 5.

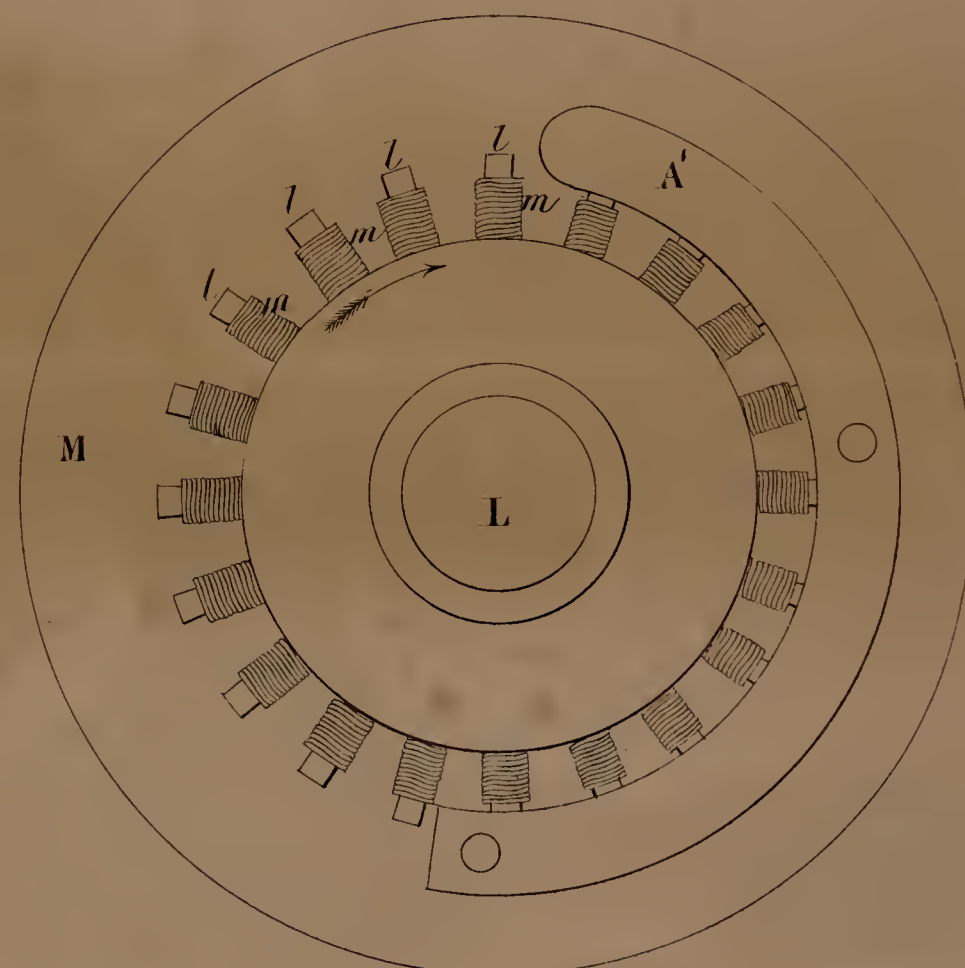


FIGURE 6.

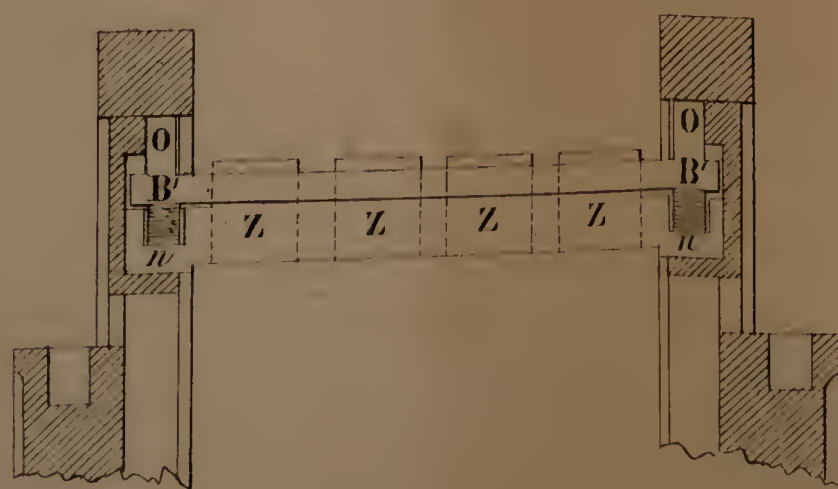


FIGURE 7.

